

# AUDIT REPORT NUMBER 97/35812/PRA01



## Audit Summary

Clauses	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.10
Covered	4.11	4.12	4.13	4.14	4.15	4.16	4.17	4.18	4.19	4.20

### Recommendations/Follow up Action

The following recommendations and follow up actions are brought to the company's attention. Further comments by the assessment team are made below.

#### ☐ PRE-AUDIT (DOCUMENT QUALITY SYSTEM REVIEW)

1. The company's Documented Quality System is deemed to be . (see 4 below)
2. The pre-assessment date \_\_\_\_\_ been agreed to and an assessment program \_\_\_\_\_ been drawn up. (see 4 below)

NOTE: The company is reminded that prior to an assessment visit it must be ensured that the quality system has been implemented, for at least 3 months, understood throughout the organization, completely audited prior to the formal assessment being undertaken, and a formal management review documented.

#### ☒ PRE-ASSESSMENT (INFORMAL ASSESSMENT)

3. The pre-assessment visit has been **UNSATISFACTORY** and the previously agreed assessment dates cannot be confirmed
4. The company is to complete the corrective action plan proforma in their possession detailing how they intend to address all the points raised, the person(s) responsible and the target completion dates. The plan should be returned within 21 working days to NQA for review.

NOTE: The company is reminded that prior to an assessment visit it must be ensured that the quality system has been implemented, for at least 3 months, understood throughout the organization, completely audited prior to the formal assessment being undertaken, and a formal management review documented.

#### ☐ ASSESSMENT

5. Registration to ISO 9001 is . The company is to complete the corrective action plan proforma in their possession detailing how they intend to address all the points raised, the persons responsible and the target dates. The plan should be returned to NQA within 21 working days for review.
6. The corrective action plan will be reviewed against the contents of the report and

#### ☐ SURVEILLANCE (CONTINUING VISITS)

7. The surveillance visit is .
8. The company is to complete the corrective action plan proforma in their possession detailing how they intend to address all the points raised, the person(s) responsible and the target completion dates. The plan should be

### NON-COMPLIANCE'S/OBSERVATIONS

9. Previously raised non-compliance's/observations: **Not Applicable**

Reference report No. , Item No.(s):

### Comments or Concerns of the Assessment Team

Implementation of the Quality system. Majors 4.2 and 4.4 Config. Mgmt.

**DATE OF NEXT VISIT: 2/98**

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THIS REPORT RELATES TO A PRE-ASSESSMENT ON 10/21-24/97

Company Name: Marshall Space Flight Center	Other addresses visited;	1.
Address: Bldg. 4201 Huntsville, AL 35812	2.	3.

SCOPE	
Design, Development, Testing and Servicing of flight hardware, flight software, protoflight units, qualification units and associate flight support equipment.	
ISO 9001 - 1994	GUIDANCE APPLICABLE:

CURRENT REVISION OF THE SUBJECT COMPANY'S DOCUMENTED QUALITY SYSTEM			
POLICY MANUAL	Quality Manual	DATE	10/7/97 Rev A
PROCEDURES	Various	DATE	Various
WORK INSTRUCTIONS	Various	DATE	Various

NQA ASSESSMENT TEAM	COMPANY REPRESENTATIVES
LEAD ASSESSOR Lee C. Bravener	NAME Robert Schwinghamer POSITION ISO 9000 Mgmt. Rep.
MEMBER 1 J. Dozier	NAMEDr. J. Wayne Littles POSITION Center Dir.
MEMBER 2 K. Thorson, M. Stevens	NAME POSITION

<p>The contents of this report are confidential to the company as named above and NQA. As such, distribution to persons not under the employ of both parties must be agreed by both parties prior to circulation.</p> <p>Any non-compliance's and observations contained within this report are the result of limited sampling and therefore it cannot be assumed that others do not exist.</p>	<p>The signature of the company's representative indicates their agreement and understanding of any non-compliance's and observations contained in this report.</p> <p>Signed: <u>R. N. Schwinghamer</u></p> <p>Position: <u>ISO Mgmt Rep. MSFC</u></p>
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Signature: <u>[Signature]</u> NQA Representative	Date: <u>10/24/97</u>
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Ref No.	Clause No.	NONCONFORMANCE AND OBSERVATIONS RAISED	NC	O
1	4.10	Cable Assembly, Drawing No. 96M70800, revision -, located in the Electrical Piece Part Receiving Inspection area, required the item to be tested in accordance with test specification no. NHB 5300.4(3G). However, test personnel indicated the item is tested in accordance with test specification no. NAS 5300.4(3G-1).	NC	
2	4.10	Measuring and Test Equipment utilized in a Vibration Qualification Test was not recorded in Vibration Test Report MSL-1-ALPT-ED97-0099 as required by OWI-ED73-P16.1-002, Test Report Control, Draft 2.	NC	
3	4.11	Mass Spectrometer Leak Standard, Asset No. M64163, located in the Mechanical Components Test Lab, was verified to be overdue for calibration. The calibration decal showed a calibration due date of October 10, 1994.	NC	
4	4.11	Measuring and Test Equipment in the Vibration Test area has not been properly categorized as required by the Control of Measuring & Test Procedure No. MSFC-P11.1, dated July 29, 1997.	NC	
5	4.11	System Test Software, utilized in the Vibration area, has not been verified as required by Control of Measuring & Test Procedure No. MSFC-P11.1, dated July 29, 1997.	NC	
6	4.13	Procedure P13.1 does not establish methodology to address trending analysis and corrective action application for discrepancy records of nonconforming material.	NC	
7	4.14	Effective handling of customer complaints is not documented within MFSC procedures. Procedures do not address how customer complaints will be addressed if a complaint is initiated from a source other than the Quality Comment Form.	NC	
8	4.18	Procedures require that supervisors record OJT, but do not provide an adequate mechanism.		O
9	4.2	All elements of the Quality System have not been fully defined, reviewed, approved, and released. many procedures remain in draft form.	Major	
10	4.20	The scope of procedure P20.1 has not included application of statistical techniques to quality system metrics, other process and product characteristics.	NC	
11	4.20	Procedure P20.1 does not establish methodology to meet the standard's requirements of 4.20.2.	NC	
12	4.4	Evidence indicates that the company procedure (MFSC-P04.2) which defines configuration management has not been implemented - Fast Trac configuration management plan is still in draft form. - Fast Trac configuration management not in compliance with company procedure. - No level III configuration management for Fast Trac. - No configuration management plan level II for X-34 project.	Major	
13	4.4	Design Control Procedures; P04.1, Design Control, P04.2, Configuration management and WI FB41-SS-007, Software Development, do not indicate minimum tailoring restrictions.		O
14	4.4	The Software Development work instruction does not address all development actions. - Peer Reviews/Code Walk Throughs. - Software development folders (SDF). - Audits of SDF.		O
15	4.4	Software Development Tools are not placed under Configuration Management controls with associated software releases.	NC	
16	4.5	Uncontrolled form in use. (PDT Change Proposal Form).	NC	
17	4.5	A methodology which would allow the reliable determination of the release/revision status of a project plan was unavailable.	NC	

Signed for Company

Signed for NQA

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Ref No.	Clause No.	NONCONFORMANCE AND OBSERVATIONS RAISED	NC	O
18	4.5	Lacking effective operator instructions for the use of the Task Assignment Database within the X-33 program.	O	
19	4.5	Level 1-3 Document Server Work Instruction incomplete for the process for posting approved procedures on the Intranet.	NC	
20	4.5	Process for placing procedures on the Electronic Packaging Procedures Server allows for procedures to available f use prior to appropriate review and approval.	NC	
21	4.6	IDR for DCN P-7-16-B5206 Serial numbers did not match PR, Purchasing Corrective Action response was that the product/material was no longer QA sensitive. Incomplete Corrective Action as described on IDR form.	NC	
22	4.6	ISO Requirements Checklists not available for QA Supplier Surveys per procedures.	NC	
23	4.6	BOA (FAB area), purchasing documents did not specify drawing Revision, drawing in package was rev. 5	NC	
24	4.6	Award Fee Tracking Database operator/administrator work instructions not completely developed.	O	
25	4.6	BOA Past Performance Database not available as required per procurement procedures.	NC	
26	4.9	Chart recorder sheets are not being maintained at defined frequencies in EH31 Composite manufacturing area.	NC	

Signed for Company

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ISO 9000  
CLAUSES

## AUDIT RECORD

Non Compliances  
Or Observations

<i>Deputy Director, Assoc. Technical</i>		
4.1	Interviewed the Center Director, <del>Assoc.</del> Center Director, ISO Rep, and Assoc. Center Director. Queried 25 employees to Policy, and intent of process. Reviewed the Or. chart and Minutes from the first Management Review meeting dated 9/8/97.	0 0
4.10	Reviewed MSFC Standard Procedure Nos. MSFC-P10.1, Baseline, Inspection and Testing, MSFC-P10.1-C01, Baseline, Equipment Logs/Records, and MSFC-P10.1-C02, Draft 1, Policy for Certification/Qualification of Flight Hardware and Program Critical Ground Support Equipment. Interviewed Inspection and Test personnel and jobs/work orders/work instructions associated with the following areas: Electrical piece parts receiving inspection work order no. 98V-120, Flight Cable, test procedure no. NAS 5300.4(3G-1); Mechanical receiving inspection, p/96M65176, o-ring assembly, test procedure no. DCN EP43-PVT-002. EMI/EMC Testing, p/n 96M70100-1, TRM Satellite Program; Advanced Computer Tomography Inspection System (CT Scan), work instructions EH13-JWI-009A, Draft 4 and EH11-OWI-002A, Draft 3; XRAY/Dipenetrant Inspection, work order no. 15-97M-1369-02 performed IAW test procedure no. EH13-OWI-013A; Protein Crystal Growth System Test and Assembly Lab, procedure nos. EL61-002, MSFC-RQMT-2423 and MTCP-FC-PCG-312; Micro Development Gravity Lab, drawin no. 500.100.AP.02, Drying Filter, procedure no. TPS EL62-MGBX-FLT-031 and retest procedure no. M-TCP-FS-MGBX-300; Vibration Lab, Vibration Qualification Test no. ISS-QUAL-ED97-102. Reviewed Vibration Qualificatio test report no. MSL-1-ALPT-ED97-0099 and test report control procedure no. OWI-ED73-P16.1-002. Reviewed measuring and test equipment associated with the above inspection/test areas.	2 0
4.11	Reviewed Control of Measuring and Test Equipment (M&TE) Procedure No. MSFC-P11.1, Revision A, Draft 1. Interviewed personnel associated with the M&TE Group. Reviewed the following calibration records and traceability to appropriate standards for the M&TE associated with the areas assessed in element 4.10 above: Asset nos. C009781, M622386, C09496, M633679, 1290-132, CM-8468, 855331, M626632, M631900, 2120A01228 and M63479. Reviewed recall list for items due for calibration in October. Calibrations are performed utilizing manufacturers manuals. Calibration labels and limited use indicators were in use.	3 0
4.12	Reviewed Inspection and Test Status Procedure No. MSFC-P12.1, Baseline. Interviewed personnel associated with properly identifying the inspection & test status for items associated with inspection & test areas assessed i element 4.10 above. Verified the inspection/test status for hardware/work orders identified in element 4.10 abov	0 0
4.13	Review of MRB centerwide activity to P13.1, P13.1-C01, reviews of DRs (form 460) 6596, 6604, 6551; DRs Clas 1 6517, 6502 with waivers W-95-1178 & W-95-1185; sampling 10+ I&ARs (form 1048-1)	1 0
4.14	Reviewed Procedure No. MSFC-P14.1, Draft 6, Corrective Action System, Quality Comment System, Procedure No. MSFC-P14.1-C01, Draft 7 and Preventive Action System Procedure No. MSFC-P14.2, Revision A. Interviewed personnel associated with the corrective action element. However, objective evidence was not available for review for this element.	1 0
4.15	Review of control per procedure P15.1 - C02; storage areas MSI (contractor) maintained to MSI Procedures; ESD/component (flight hdwr) storage EP-52; Cold storage for composite material EH-31	0 0
4.16	Reviewed quality records associated with other elements of the standard, verified requirements.	0 0
4.17	Reviewed Internal Quality Audits Procedure no. MSFC-P17.1, Baseline. Interviewed personnel associated with t Internal Quality Audit process. Reviewed audit schedule dated 10/21/97. Reviewed auditor qualifications for D. Miller, E. Reichman, C. Denniston, R. Malone and McCaleb. Reviewed closed Corrective Action reports nos. G 97-08-007, -008 and -013, issued as a result of the a purchasing internal audit. Reviewed internal audit reports AA01 ( calibration), JA01 (Project Management, Flight Hardware) and GP01 (Purchasing).	0 0

Customer Complaints      Use of NQA Mark

See 4.14

NA

## AUDIT RECORD

**ISO 9000  
CLAUSES**

**Non Compliances  
Or Observations**

4.18	Interviewed the manager of HR training. Reviewed the online system being developed for tacking training information. Reviewed procedures for Cert. Training and reviewed plan for tracing OJT training. Selected and verified the Training information for 5 individuals.	0	1
4.19	N/A	0	0
4.2	Reviewed the implementation status of the Quality program. Interviewed the ISO rep for implementation Plan. Reviewed the Quality Plans for Shuttle, Fastrac and Image program. Verified the Procedure structure.	1	0
4.20	Review against P20.1 in S&MA (HEI contractor); overview of the scope and applicability to center; T/R report CR70-16S02-R01-003 May 97	2	0
4.3	Interviewed Technical Dev. Investment personnel, reviewed procedures for contract review activities including contract amendment. Interviewed Space Transportation Program Office personnel. Inspected X-33 contract change records(Task Assignments), Amendment information flowdown server. Interviewed Chief Engineer X-33 program for compliance to procedures for contract review activities.	0	0
4.4	Reviewed the project info for Fastrac, Shuttle, LDA and Image programs. Interviewed the program manager, chief Engineer, Configuration Manager, and other key individuals from the project. Reviewed the Project Plans f each program, Configuration Plans, Configuration review minutes, CDR?PDR files from each and action item list. Interviewed individuals program leads for software development, Reviewed the WI for Software development. Reviewed approaches they are taking for Peer review and code walk through. Reviewed the online configuration control exercised for software version control. Traced the configuration levels for the X-34 program from level II through Level V.	2	2
4.5	Interviewed Documentation Repository personnel, inspected drawing files, EO documents, On-line Document tracking database(Master List). Reviewed the process for document request/delivery. Inspected External Standards distribution process(IHS) and interviewed cognizant personnel. Reviewed control of obsolete drawings(Hardcopy). Interviewed Webmaster for Level 1-3 Document control. Interviewed Labs(Electronic Packaging) webmaster personnel and reviewed corresponding procedures. Reviewed the release status for program documentation for Shuttle, Fastrac, Image and X-34	4	1
4.6	Interviewed Chief Research & Dev. Div., Team Lead Hardware & Equip., BOA - University, BOA - Fab, Quality Specialist, CO & Team Lead for compliance to procedures and standard. Reviewed purchasing folders/records (7-EL-53748), reviewed use of drawing included in PR's (96M78834), Basic Order Agreements for Fab and Universities. Past Performance records DB for Award fee projects. Reviewed inspection documents for Quality Sensitive requirements flowdown. Inspected Procurement Corrective Action on IDR's(Inbound Discrepancy Reports.	4	1
4.7	Review of control per procedure P07.1 Atlas IIAR program Customer Supplied Product Arrangement 97-RD180-028 Rev B activities for control of nonconforming material - Probe/tank	0	0
4.8	Traceability control per procedures P08.1, P08.2; VCD Program (EEE parts) Parts Control Plan; SX12 Project GSGC Certification log; HAMVRA-011A Housing Non Std Part Approval Request; review of 10+ Inspection Records	0	0
4.9	Process control activity to P09.1 in EH31, EH52; Work instruction EH33 WI-002 for composite lay in review of EH31 fabrication area; review of EH52 fabrication area/sample W/O remote arm support stand	1	0
<b>Total</b>		<b>21</b>	<b>5</b>

**Customer Complaints**

**Use of NQA Mark**

See 4.14

NA